

U.S. Serial No.: 10/678,879
Filed: October 3, 2003

Examiner: Michael Marcheschi
Art Unit: 1755

CLAIMS

1. Cancelled

2. Cancelled

3. Cancelled

4. (Currently Amended) An abrasive agent comprising metal oxide abrasive particles, said particles being coated at least partially with an extraneous metal ~~or~~ metal bearing layer, wherein the metal layer comprises a metal in its zero valence state.

5. Cancelled

6. Cancelled

7. (Currently Amended) A chemical mechanical polishing (CMP) composition comprising an abrasive agent according to claim 4.

8. (Currently Amended) The CMP composition of claim 7 wherein the metallic or metal bearing layer also comprises include metals or metalloids at zero valence state, metal oxides, metal hydroxides, water-insoluble metal compounds, as well as mixtures thereof.

9. (Currently Amended) The CMP composition of claim 8 7 wherein the metal-bearing layer comprises at least one metal selected from the group consisting of Cu, Ti, Fe, Sn, Pb, Ta, Mo, Wo and Nb.

10. Cancelled

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11. (Currently Amended) A fixed abrasive CMP chemical mechanical polishing pad comprising abrasive particles according to claim 4.

12. Cancelled

13. (Currently Amended) A fixed abrasive CMP chemical mechanical polishing pad comprising abrasive particles according to claim 4, wherein said particles are completely covered with a the metal bearing layer coating.

14. Cancelled

15. Cancelled

16. Cancelled

17. (Currently Amended) A method of manufacturing an integrated circuit comprising using a composition according to claim 6 7.

18. Cancelled

19. Cancelled

20. (Currently Amended) An abrasive agent comprising abrasive particles, said particles being in the form of a composite material comprising more than one metal oxide and being coated at least partially with an extraneous metal or metal bearing layer, wherein said metal layer comprises metal in its zero valence state.

21. Cancelled

22. Cancelled

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23. (New) An abrasive agent according to claim 4, wherein the particles are coated with copper or copper alloy in its zero valence state.

24. (New) A chemical mechanical polishing composition comprising an abrasive agent according to claim 23.

25. (New) A chemical mechanical polishing composition comprising:

- a. abrasive particles coated with a metal layer wherein the metal layer comprises metal in its zero valence state; and
- b. abrasive particles which are not coated with a metal layer.

26. (New) A composition according to claim 25 wherein the coated abrasive particles are coated with a coating comprising zero valent copper or copper alloy.

27. (New) A method of chemical mechanical polishing, said method comprising contacting a substrate with a composition comprising:

- a. abrasive particles coated with a metal layer wherein the metal layer comprises metal in its zero valence state; and
- b. a metal bearing colloid;

wherein the metal bearing colloid forms a zero valent metal coating on the abrasive particles.

28. (New) A method according to claim 27, wherein the metal bearing colloid is added to the composition at a time selected from the group consisting of (i) the beginning of the polishing, and (ii) intermittently during the polishing.

29. (New) A method according to claim 27, wherein the metal bearing colloid also forms a metal coating on the substrate.

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30. (New) A method according to claim 27, wherein the metal bearing colloid comprises a metal selected from the group consisting of copper, tin, and alloys of the foregoing.
31. (New) A method of manufacturing an abrasive particle, said method comprising:
 - a. contacting an abrasive particle comprising a metal oxide or metal nitride with a copper plating solution comprising (i) copper ions, and (ii) reducing agent; wherein the copper plating solution plates a layer of zero valent copper onto the surface of the abrasive particle.
32. (New) A method according to claim 31, wherein the copper ions are derived from a waste copper solution.
33. (New) An abrasive agent for use in chemical mechanical polishing, said abrasive agent comprising abrasive particles which particles comprise an extraneous alloy metal layer wherein said alloy metal layer comprises metal in its zero valence state and wherein the alloy metal layer acts galvanically to minimize dishing.